

In re Application of: PETERSEN et al.  
Application No.: 10/651,829  
Page 5 of 8

### REMARKS

Claims 1-21 are pending in the application. Claims 1-10 and 13-21 are withdrawn as being directed to non-elected subject matter.

Claims 11 and 12 have been amended. Support for these amendments is found throughout the specification. Specific examples are provided in the body of the Response. No new matter has been added by virtue of the amendments and their entry is respectfully requested.

### *Claim Objections*

Claim 11 has been amended to correct a grammatical error. The amendment is deemed to obviate the objection. Reconsideration and withdrawal of the objection is respectfully requested.

### *Claim Rejections Under 35 U.S.C. § 112.*

Claims 11 and 12 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner has rejected claim 11 based on the expression "increases cAMP concentration." Applicants have amended the claims to explicitly claim what was implicit in the specification. The increase in cAMP concentration occurs when a stem cell is cultured in medium which comprises an agent such as IBMX and dbcAMP which increase cAMP in the stem cells as compared to controls which are cultured in absence of such agents. Applicants show that in such stem cells, these stem cells differentiate into cells expressing a neural cell phenotype as identified by their neural markers. Support is found throughout the specification. See for example page 8, lines 8-27.

Claim 12 has been amended to replace the term "a" with the term "the." No new matter has been added by these amendments and their entry is respectfully requested.

Applicants amendment is deemed to have obviated this rejection. In view thereof, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

(WP258541:1)

In re Application of: PETERSEN et al.  
Application No.: 10/651,829  
Page 6 of 8

***Claim Rejections Under 35 U.S.C. § 102.***

Claims 11 and 12 have been rejected under 35 U.S.C. § 102 (e) as being anticipated by Rao et al., U.S. Patent 683,0927, issued December 14, 2004, filed May 6, 1998.

Applicants respectfully traverse.

Applicants invention is directed in part to the isolation and differentiation of a liver stem cell, that is present in the liver, culturing the cell in an agent that increases the cAMP in that cell, which, surprisingly, differentiates into a neural cell and not a liver cell. See, for example, page 8, lines 7-27 of the instant application:

***Example 1 – In vitro Trans-differentiation***

**HOCs acquire characteristics of a neuron-like cell phenotype when treated with IBMX and dbcAMP, both of which elevate the level of cytoplasmic cAMP. One day before the experiment began, HOCs were transplanted into a 6 well plate at 60% confluence, and cultured overnight in Medium A, a medium that contained IMEM, supplemented with 10% FBS, 1% insulin, 10 ng/ml IL-3, 10 ng/ml IL-6, 10 ng/ml SCF, and 1000 U/ml LIF. On day two, the culture media was replaced with induction media (Medium A lacking LIF but supplemented with 0.5 mM IBMX, 1 mM dbcAMP without LIF). Cells were then cultured for up to four weeks in a humidified 37°C, 5% CO<sub>2</sub> incubator, during which time, the media was changed once per week. Cells in the culture started to send out processes 24 hours after being added to the induction medium. After about one week, 30% of the cells exhibited neuron-like cell morphology.**

**Cells in the culture were later examined for expression of neural cell differentiation markers. After four weeks in the induction medium culture, the cells were removed from the culture and fixed for 5 minutes with 4% paraformaldehyde. After washing with PBS 3 times for 5 minutes and blocking in 10% goat serum for 30 minutes, primary antibodies against a neuron-specific protein ( $\beta$ III tubulin) and an astrocyte-specific protein (S100) were then incubated with the cells for 1 hour at room temperature. After washing the cells again in PBS 3 times for 5 minutes per wash, the cells were incubated with fluorescent secondary antibodies for 1 hour at room temperature. The cells were then washed 3 times for 5 minutes per wash in PBS, placed on a cover-slip, and subjected to fluorescent microscopy. Most of the cells in the culture were S100 positive; a small population of the cells were  $\beta$ III tubulin positive. (Emphasis added).**

{WP258541:1}

In re Application of: PETERSEN et al.  
Application No.: 10/651,829  
Page 7 of 8

Rao *et al.*, does not teach the differentiation of a liver stem cell into a neural cell. Furthermore, Rao *et al.*, does not teach or disclose how to differentiate a stem cell, which is already present in an organ and differentiate that cell into a cell that has the phenotype of a foreign tissue, organ etc. Applicants have also amended the claims to explicitly recite the invention. Applicants submit that Rao *et al.*, does not teach each and every limitation of claims 11 and 12.

In view thereof, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

Claim 11 is rejected under 35 U.S.C. § 102(b) as being anticipated by Ma *et al.*, *Nat. Neurosci.* 2(1):24-30, 1999.

Applicants respectfully traverse.

Ma *et al.*, does not teach or disclose the differentiation of liver stem cells into cells that express a neural cell phenotype. Furthermore, Ma *et al.*, do not teach the culturing of stem cells but rather look at protein syntheses of mature neural cells in the presence of a cAMP analog. There is nothing in the teachings of Ma *et al.*, wherein a liver stem cell is cultured with an agent which increases cAMP in such a stem cell and the liver stem cell **differentiates into a neural cell**. Ma *et al.*, do not teach each and every limitation of the instant claims.

In view thereof, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

### CONCLUSION

In view of the foregoing, reconsideration and withdrawal of all rejections and allowance of the application with claims 11 and 12 are respectfully solicited. The amended claims set forth,

{WP258541:1}

In re Application of: PETERSEN et al.  
Application No.: 10/651,829  
Page 8 of 8

herein, are merely to expedite prosecution and allowance of the application and is not to be construed as surrender of any subject matter in the instant application. Applicants hereby reserve the right to pursue the subject matter of the canceled claims in one or more continuations, continuation-in-part or divisional patent applications.

If there are any remaining issues or the Examiner believes that a telephone conversation with the Applicants' attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at telephone number shown below.

Although, Applicants believe that no extensions of time are required with submission of this paper, Applicants request that this submission also be considered as a petition for any extension of time if necessary. The Commissioner for Patents and Trademarks is hereby authorized to charge the amount due for any retroactive extensions of time and any deficiency in any fees due with the filing of this paper or credit any overpayment in any fees paid on the filing or during prosecution of this application to Deposit Account No. 50-0951.

Respectfully submitted,

AKERMAN SENTERFITT



Nicholas A. Zachariades  
Registration. No. 56,712  
P.O. Box 3188  
West Palm Beach, FL 33402-3188  
Tel: 561-653-5000

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{WP258541:1}